

Discovery Exercise for Linear Dependence and the Determinant

1. Solve the following equations for x and y .

$$2x + 3y = 7$$

$$4x + 2y = 21$$

See Check Yourself #42 at felderbooks.com/checkyourself

2. Try to solve the following equations for x and y . Explain what went wrong.

$$2x + 3y = 7$$

$$4x + 6y = 21$$

3. Find at least two pairs of numbers (x, y) that solve the following equations.

$$2x + 3y = 7$$

$$4x + 6y = 14$$

You may have been taught that n linear equations with n unknowns have exactly one solution, but this isn't always the case. In some cases they have one solution, in some cases they have none, and in some cases they have infinitely many solutions. With two equations and two unknowns you can figure out which case you're dealing with by playing with the equations for a bit, but larger sets of equations demand a systematic approach.